



DYSLIPIDEMIA (*MEDOROGA*) AND ROLE OF LIFESTYLE MODIFICATION

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Article Received on 22/04/2020

Article Revised on 12/05/2020

Article Accepted on 02/06/2020

ABSTRACT

The incidence lifestyle diseases like hypertension, diabetes mellitus, dyslipidemia and obesity associated with cardiovascular disease is high on the rise. Dyslipidemia is elevation of plasma cholesterol, triglycerides (TGs) or both or low high density lipoprotein level (HDL) that contributes to development of atherosclerosis. The epidemic of cardiovascular disease (CVDs) is the most prevalent cause of death and disability in both developed and developing countries. In India there has been an alarming increase in prevalence of CVD over the past two decades so much that accounts for 24% of all deaths among adult age 25-69 years. The world health organization estimates that dyslipidemia is associated with more than half of global cases of ischemic heart disease and more than 4 million deaths per year. Ayurveda is recognized as foremost life science. It describe way to prevent as a whole meaning and intervention targeted towards complete physical, psychological and spiritual well being disorder. So here an attempt has been done to understand the dyslipidemia in *Ayurvedic* perspective.

KEYWORDS: Dyslipidemia, *Medo Roga*.

INTRODUCTION

The term fat may refer to lipids as well as cells and tissues that store lipid (i.e adipocytes and adipose tissue), lipid is derived from lipos, which refer to animal fat or vegetable oil. Adiposity refers to body fat and derived from adipo referring to fat. Adipocyte hypertrophy and excessive adipose tissue accumulation can promote pathogenic adipocyte and adipose tissue effects (adiposopathy), resulting in abnormal levels of circulating lipids, with dyslipidemia being a major atherosclerotic coronary heart disease risk factor. On 16th September 2012, the National Lipid Association held a consensus conference with the goal of better defining the effects of adiposity on lipoproteins, how the pathos of excessive body fat contributes to dyslipidemia, and how therapies like appropriate nutrition, increased physical activity and weight management drugs, might be expected to impact dyslipidemia.

Dyslipidemia is an abnormal amount of lipids (e.g. triglycerides, cholesterol, and fat phospholipids) or lipoproteins in the blood. This is often due to diet and sedentary lifestyle. Prolonged elevation of insulin levels can also increase levels of O-GlcNAc transferases (OGT) may cause dyslipidemia. Underlying cause for this condition may be genetic, or secondary to any other

condition. In *Ayurveda*, dyslipidemia can be correlated to *Medopradoshaja Vikara* (disorders of improper lipid metabolism) it is a condition caused by derangement of Agni, that leads to the formation of *Aamrasa* (improper formation of *Aaharasa*). The *Aamrasa* with combination of *Madhura Rasa Bhavadhikya* leads to *Kapha Meda Dhatu Nirmiti* (lipid tissue formation). This undergoes unique manifestation of *Dhatu Utpattikrama* pathology without formation of *Rakta Dhatu* (blood) and *Mamsa Dhatu* (muscle). This causes abnormal excess formation of *Meda Dhatu* and goes through circulation this particular stage can be correlated with dyslipidemia which may be in reference with *Asthayee* (unstable) *Medo Datu Vruddhi*.

The global burden of non communicable diseases is rapidly increasing and the essential management is to follow a healthy lifestyle. Ayurveda can play a major role in this aspect, as the primary aim of Ayurveda is to prevent diseases by following a healthy lifestyle.

AIM AND OBJECTIVE

To review explore and correlate the *Ayurvedic* literature and modern science concept on lifestyle modifications including physical activity, *Yoga* and in dyslipidemia.

Prevalence

Dyslipidemia is the most important atherosclerotic risk factor. Review of population based studies in India shows increasing mean total cholesterol levels. Recent studies have reported that high cholesterol is present in 23-30 % of urban and 15-20 % rural subjects. This prevalence is lower than high income countries. The most common dyslipidemia in India are borderline high LDL cholesterol, low HDL cholesterol and high triglycerides. Studies have reported that over a 20 year period total cholesterol, LDL cholesterol and triglycerides levels have increased among urban populations. Case control studies have reported that there is significant association of coronary events with raised apolipoprotein B, total cholesterol, LDL cholesterol and non HDL cholesterol and inverse association with high apolipoprotein A and HDL cholesterol.

REVIEW OF LITERATURE

Charakasamitha

Medovruddhi lakshanas, causative factors sign and symptoms with prognosis and management narrated in details under the heading of *Ashta Nindita Purusha* chapter he said the over obese had eight defects as shortening of life span, hampered movements (*Chankraman Kashta*), difficulty in sexual intercourse (*Vyavay*), debility, foul smell (*Durgandha*), over sweating (*Swadh Adhikya*), too much hunger (*Shudha Adhikya*) and excessive thirst (*Tushna Adhikya*). Over obesity is caused by over saturation, intake of heavy (*Guru Ahar*), sweet (*Mdhur Rasa*), cold (*Shita*) and fatty diet (*Snigdha Ahara*), indulgence in day sleeping (*Nidra*) and exhilaration, lack of mental work and genetic defect. There is excess of fat in him and further only fat is accumulated and not the other *Dhatu* so, thus the life span is shortened; because of laxity, softness (*Mrudu*) and heaviness (*Guru*) of fat there is hampering in movement; foul smell is due to defect and nature of fat and also sweating due to association of *Meda* with *Kapha*, its oozing (*Stravan*) nature, abundance, heaviness (*Guru*) and intolerance to physical exercise there is over *Swead* (sweating) because of intensified *Agni* (Digestion) and abundance of *Vayu* in belly there is excessive hunger and thirst. *Vayu* due to passage having been obstructed with fat, moves about abundantly in belly and thus stimulates digestion and absorbs food. Hence the person digests food quickly and desires excessively the intake of food. In case of delay intaking food he is afflicted with some severe disorders. These two, *Agni* and *Vayu* are particularly complicating and as such burn the obese like the forest fire burning the forest. In the disorders and thus destroy the life shortly. The person call as over obese who due to excessive increase of fat muscles, has pendulous *Shiphak* (buttocks), *Udar* (abdomen) and *Stana* (breasts) and suffer from deficient metabolism and energy. Thus described the defects, cause and symptoms of the obese.^[1]

Sleshma Nimitaj 20 *Vyadhi* explain by *Acharya Charak* such as saturation, *Tandra* (excessive sleep), *Sheet*

Sparsh (cold sensation), *Guru* (heaviness in the body), *Mahursyata* (sweetness in mouth), *Lalastrav* (salivation), mucous expectoration, excess of diet, indigestion, plastering of heart, plastering of throat, accumulation in vessels, goiter, over plumpness, urticarial patches, white luster, whiteness in urine, eyes and faces etc.^[2]

Santarpana nimitaja shall explain oversaturation *Hetu* and *Vyadhi Hetu* like sweet, heavy, sticky substance, new cereals, fresh wine, meat of marshy and aquatic animals, milk and its products, jiggery and flour preparations and abstains from physical movements including day sleep, comfortable beds and seats suffers from *Vyadhi* (diseases) caused by over saturation such as *Prameha* (diabetes), diabetic boils, urticarial patches, *Kandu* (itching), impotency, Anaemia, lassitude, *Guruta* (heaviness) in body, obstruction in sense organs and channels, *Shulya* (over obesity), *Tandra* (sleepiness), *Shoth* ((swelling)).^[3]

Ati Brumhana Nimitaja shall explain those having big body and strength, abundant *Kapha*, *Pitta*, blood and excreta, and association of (aggravated) *Vayu* should be subjected to reducing therapy by means of evacuation. Those afflicted with the diseases of moderate severity and caused by *Kapha* and *pitta* like vomiting, diarrhea, heart disease, cholera, *Alasaka*, fever, constipation, heaviness, eructation, nausea, anorexia etc. should mostly be treated with digestion. These very diseases, when with little severity, should be over come with control of thirst and fasting. The diseases of moderate and little severity in strong in strong persons should be treated with physical exercise and exposure to the sun and wind. The persons suffering from skin disorders, diabetes and those using excess of unctuous, channel blocking and promoting diet and patients of *Vatika* disorders should be subjected to reducing therapy in *Sisira* (late winter).^[4]

Indigestion, anorexia, obesity, paleness, heaviness, exhaustion, appearance of boils, urticarial patches and itching (*Kandu*), uneasiness, lassitude, fatigue (*Dhurbarlya*), debility, foul smell (*Durgandhya*), depression, regurgitation of *Kapha* and *pitta*, sleeplessness (*Tandara*) or over sleep, drowsiness, impotency, intellectual impairment, inauspicious dreams, loss of strength and complexion even after saturation with body promoting nutrients these are the symptoms of the one having plenty of *dosha*.^[5]

Shushrut Samitha

Acharya Shushrut in *Dosh Dhatu Mala Vigyana* narrated the etiopathogenesis of *Medovruddhi* on basis of an endogenous entity being caused due to *Dhatvagnimandya* and result of vitiated *Meda Dosha*.^[6]

Ashtangsamgraha

Different aspects of *Medoroga* are mentioned in *Ashtangasangraha*.

Side effects of excessive alcohol intake in Medadhikya Purusha are noted. A person who is strong, who drink wine after taking food, who eat large quantity of food, who have strong will and age, who take liquor every day, who are habituated to liquor, who have predominance of fat and *Kapha* in their body, who have *Vata* and *Pitta* at lower degree and who have very stable digestive activity do not get onto profound intoxication.^[7]

Concept of lipids in Ayurveda

In our body there are many layers rich in lipids. All these have Sneha (oiliness) as common feature. They are *Meda Dhatu*, *Vasa* and *Majja Dhatu* which have *Snigdhatata* as common feature, but differ in their sites and functions. It is so called because it soothes (*Snihyati*) the body.

Sthana and Swarupa

Sthana: Thus *Meda* situated in *Medodharakala*, *Vasa* and *Majja*.^[8]

Swarupa: There are two heads *Meda Dhatu* depending upon.^[9]

1. *Poshaka Medodhatu: Achala* (immobile in nature) it is circulated in whole body along with *Gatiyukta Rasa Rakta Dhatu* for nourishing the *Poshya Meda Dhatu*. According to modern science it can be

correlated with cholesterol and lipids present during circulation of blood.

2. *Poshya Medodhatu: Chala* (mobile) in nature which is stored in *Medodharakala* in sites i.e. *Udara* (Abdomen), *Sphika* (Gluteal region), *Stana* (Breast), *Gala* (Neck) etc and *Vasa* (Mamsagata Sneha). According to modern science it can be correlated with adipose tissue.

Properties of meda dhatu

Gunas: *Meda Dhatu* is also considered as a Sneha (Oily) dominant *Drava* (liquefied) *Dhatu* having *Guru* (heaviness), *Snigdha* (oiliness) etc. *Gunas*.^[10]

Panchmahabhawtika: Dominance of *Prithvi, Jala, Teja Mahabhutas* concentrates in *Meda Dhatu*.^[11]

Pramana of meda dhatu: According to *Charaksamhita*: the total quantity of *Meda* is 2 *Anjalis*.^[12]

Metabolism of *Meda* in *Medovruddhi*: When a person indulges by said *Medovruddhi*, vitiation of *Dhatwagni* takes place and leads to improper *Rasavruddhi* with *Kaphavruddhi* and ultimately results in production of *Vikruta Medodhatu* after involvement with *Medo Dhatu*.

<i>Meda</i>	Lipids
Ingestion of food articles with excessive <i>Sneha</i> (i.e. <i>Ghruta, Taila, Vasa</i> and <i>Majja</i>)	Intake of high fat diet (i.e. Ghee, oil, cheese, butter etc.) increases body lipids.
Dietary intake of excessive <i>Madhura Dravyas</i> cause <i>Medovruddhi</i> .	Increased consumption carbohydrates (especially sucrose enhances cholesterol level.)
<i>Medo-Snigdhangata</i>	Fat gives an oily appearance to the body.

Thus similarities between *Meda Dhatu* and lipids are seen as above the formation of *Meda Dhatu* is explained above any variation in the above said pathology causes disturbance in the formation of it and hence causes *Medovruddhi* which can be dyslipidemia.

Physical Activities

Exercise is recommended as a therapeutic lifestyle change as it leads to various health benefits. It also known to bring about changes in lipid parameters.

The important factors that have to be considered during an exercise session are its intensity and duration. Low intensity exercise done for longer periods use fat as the substrate for energy whereas high intensity exercise uses carbohydrates rather than fat.

So low to moderate exercise is beneficial to produce changes in the lipids. Abnormal blood lipids are a significant cardiovascular health risk.

Exercise also exerts an effect on HDL-C maturation and composition cholesterol efflux and cholesterol delivery to receptors also positive effects of exercise are also seen with blood triglyceride but little specific effect is seen on LDL-C total cholesterol.

Regular exercise is a widely recognized modality to rise plasma HDL cholesterol levels which is one of metabolic adaptation contributing to reduced risk of coronary heart disease (CHD) observed amongst the physically active and fit individuals. Although a low plasma HDL cholesterol concentration is often accompanied by an elevated triglyceride (TG) level associated with abdominal obesity and an insulin resistance hyperinsulinemic stayed some individuals are characterized by low HDL cholesterol levels without obesity or hypertriglyceridemia a condition that has been referred as isolated hypolipoproteinemia.

Aerobic exercise

Aerobic activities include walking, jogging, cycling, jumping rope, swimming, kickboxing, treadmill, aerobic dancing etc. Helps relax blood vessels wall, lower blood pressure, burn body fat, lowers blood sugar, and reduces bad i.e. LDL cholesterol levels and good cholesterol level when combined with weight loss.

Strength training

Strengthens your muscles also stimulates bone growth lowers blood sugar assist with weight control, improves balance and posture and reduced stress and pain in lower back and joints.

Balance exercise Improving your balance makes you feel steadier on your feet and helps prevent fall.

Effects of exercise intensity on lipid profile in obese adults physical inactivity is a state leads to major health problems like obesity, hypertension and various metabolic disorders.

Yoga influences cholesterol levels

Yoga is physical, mental, and spiritual practice or discipline that aims to transform the body and mind. *Yoga* means actualization of human potential to perfection through its three dimensional approach to health physical mental and spiritual. *Yoga* is very much relevant today as both a physical activity and its effective way of managing stress.

Combination therapies like diet and exercise are effect on lipid profile.

Diet therapies lower triglycerides and LDL-C concentration where as exercise intervention increases HDL cholesterol while decreasing triglyceride level LDL-C and triglycerides concentration.

Combination lifestyle therapies are improving cholesterol levels in dose diagnosed with dyslipidemia and should be implemented in place of drug therapy when cholesterol level fall just above the normal level. Pranayama for lowering cholesterol naturally. i.e *Anulom Vilom* Pranayama and *Kapalbharti* pranayama.

OBSERVATION AND RESULTS

Vedas appreciated exercise and hard work made body like a stone in other words indicated hazards of flabbiness of the body and obesity.

Diet induced weight loss with regular exercise improves many risk factors for metabolic syndrome and has recently shown to increase cholesterol absorption in dyslipidemia through integrated approaches.

CONCLUSION

There is large scope of implementing classical knowledge (that is healthy lifestyle based on *Ayurvedic* principles) real practice which will be beneficial to all of the society. Thus implementation of classical *Ayurvedic* knowledge should follow systematic process, regular physical activity when combined with weight loss can help in lowering cholesterol and triglyceride level. It also has a positive effect on many other risk factor for heart disease including high blood pressure, diabetes and obesity.

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